WHAT IS CLAIMED IS:

1.   A computer method comprising:

providing a database comprising a compendium of at least one of patient treatment history; orthodontic therapies, orthodontic information and diagnostics;

employing a data mining technique for interrogating said database for generating an output data stream, the output data stream correlating a patient malocclusion with an orthodontic treatment; and

applying the output data stream to improve a dental appliance or a dental appliance usage.

2.   The method of claim 1, further comprising generating a plurality of appliances having geometries selected to progressively reposition the teeth, wherein the appliances comprise polymeric shells having cavities and wherein the cavities of successive shells have different geometries shaped to receive and resiliently reposition teeth from one arrangement to a successive arrangement.

3.   The method of claim 2, wherein the sequence of appliances includes a sequence of configurations of braces, the braces including brackets and archwires.

4.   The method of claim 2, wherein the sequence of appliances includes a sequence of polymeric shells manufactured by fitting polymeric sheets over positive models corresponding to the teeth of the patient.

5.   The method of claim 1, wherein the sequence of appliances includes a sequence of polymeric shells manufactured by stereo lithography from digital models

6.   The method of claim 1, wherein the output data stream is related to clinical constraints.

1   7.   The method of claim 6, wherein the clinical constraints include a maximum rate

2   of displacement of a tooth, a maximum force on a tooth, and a desired end position of a

3   tooth.

1   8.   The method of claim 7, wherein the maximum force is a linear force or a torsional

2   force.

1   9.   The method of claim 7, wherein the maximum rate of displacement is a linear or a

2   angular rate of displacement.

1   10.   The method of claim 6, wherein the clinical constraints include a maximum rate

2   of displacement of a tooth.

1   11.   The method of claim 6, wherein the clinical constraints include a maximum rate

2   of linear displacement of a tooth.

1   12.   The method of claim 6, wherein the clinical constraints include a maximum rate

2   of rotational displacement of a tooth.

1   13.   The method of claim 1, wherein the last of the sequence of appliances is a

2   positioner for finishing and maintaining teeth positions.

1   14.   The method of claim 1, further comprising:

2   comparing an actual effect of the appliances with an intended effect of the appliances;

3   and

4   identifying an appliance as an unsatisfactory appliance if the actual effect of the

5   appliance is more than a threshold different from the intended effect of the appliance and

6   modifying a model of the unsatisfactory appliance according to the results of the

7   comparison.

1   15.   The method of claim 1, further comprising capturing at least an initial tooth

2   position, a target tooth position; and one or more intermediate tooth positions.

1   16.   The method of claim 1, further comprising analyzing one of the intermediate

2   tooth positions with the target position.

1   17.   The method of claim 1, further comprising capturing characteristics tags

2   associated with a patient case to label captured data.

1   18.   The method of claim 17, further comprising aggregating data of a set of

2   treatments based on their tags and rating the set of treatments based on the aggregated

3   data.

1   19.   The method of claim 18, further comprising comparing performance of a plurality

2   of sets of treatments.

1   20.   The method of claim1, further comprising applying models to calculate risk of

2   treatment complications for individual patients.

1   21.   The method of claim 20, further comprising identifying a treatment case for

2   special handling.

1   22.   The method of claim 20, further comprising identifying a treatment case for

2   special treatment parameters including clinical constraint.

1   23.   The method of claim 20, further comprising clusterizing clinical practitioners by

2   practice habits.

1   24.   The method of claim 23, wherein treatment parameters are adapted to preferences

2   specific to each cluster.

1   25   The method of claim 1, further comprising applying probabilistic models to

2   predict discrepancies between targeted and actual tooth position at given stages in

3   treatment, and where said predictions are calculated into treatment plans.